

ABSTRACT
Non-Volatile Memory Device

MRAM has read word lines WLR and write word line WLW extending in the y direction, write/read bit line BLW/R and write bit line BLW extending in the x direction, and the memory cells MC disposed at the points of the intersection of these lines. The memory MC includes sub-cells SC1 and SC2. The sub-cell SC1 includes magneto resistive elements MTJ1 and MTJ2 and a selection transistor Tr1, and the sub-cell SC2 includes magneto resistive elements MTJ3 and MTJ4 and a selection transistor Tr2. The magneto resistive elements MTJ1 and MTJ2 are connected in parallel, and the magneto resistive elements MTJ3 and MTJ4 are also connected in parallel. Further, the sub-cells SC1 and SC2 are connected in series between the write/read bit line BLW/R and the ground.